

Technical Potential of Solar Energy to Address Energy Poverty and Avoid GHG Emissions in Africa

INTRODUCTION

Approximately 1.6 billion people worldwide do not have access to electricity, and roughly 2.4 billion people rely on traditional biomass fuels to meet their heating and cooking needs (IEA 2002). Lack of access to and use of energy—or energy poverty—has been recognized as a barrier to reaching the Millennium Development Goals (MDGs) and other targeted efforts to improve health and quality of life (IEA 2002). Reducing reliance on traditional biomass can substantially reduce indoor air pollution-related morbidity and mortality; increasing access to lighting and refrigeration can improve educational and economic opportunities. Though targeted electrification efforts have had success within Latin America and East Asia (reaching electrification rates above 85%), sub-Saharan Africa has maintained electrification rates below 25% (IEA 2004).

ENERGY GAP IN AFRICA

- Energy gap defined as difference between a country's energy needs and current consumption.
- 1,500 W per person (13,140 kWh/capita-year) across all sectors was selected as an energy consumption baseline or target (average of values proposed by Goldemberg 1985 and Spreng 2005)
- 2005 total consumption data reported by the Energy Information Administration (EIA) were used in this analysis (2008).
- Population and other data were obtained from the Human Development Report (UNDP 2007); for countries with data not reported in the Human Development Report, data from the World Factbook were used (CIA 2008).
- Only nationally aggregated numbers were used, so no information on energy equity within countries can be derived here.

Only three African countries did not show an energy gap: Equatorial Guinea, Libya, and South Africa averaged 30,276, 37,028, and 30,818 kWh/capita-year, respectively. Of the remaining countries, the energy gap ranged from 437 kWh/capita-year in Algeria to 13,053 kWh/capita-year in Chad. Twenty-one of the 48 countries included in this analysis average less than 1,140 kWh/capita-year, or less than 9% of the benchmark value of 13,140 kWh/capita-year (see **Figure 1**).

